METHOD FOR THE FORMATION OF AEROGEL PRECURSOR USING RAPID GELATION TWO-STEP CATALYSIS

ABSTRACT

A rapid gelation, two-step method for the production of an aerogel precursor is disclosed. The method involves the addition of a small amount of catalyst during mixing of alcogel components in order to allow some pre-polymerization to occur. Next, the addition of the remainder of the catalyst quickly forms or gels the solution into the alcogel. The gelation of the solution to form the alcogel typically takes place in 5 to 60 seconds, but can be done in under 1 second and in as long as several hours. The gel time can be controlled specifically by adjusting the chemical contents of the solution and the amount of time between the two additions of catalyst. The resulting alcogel can then be processed further to form an aerogel which can be put to use in many unique applications including fabrics, insulative blocks, and microchips.